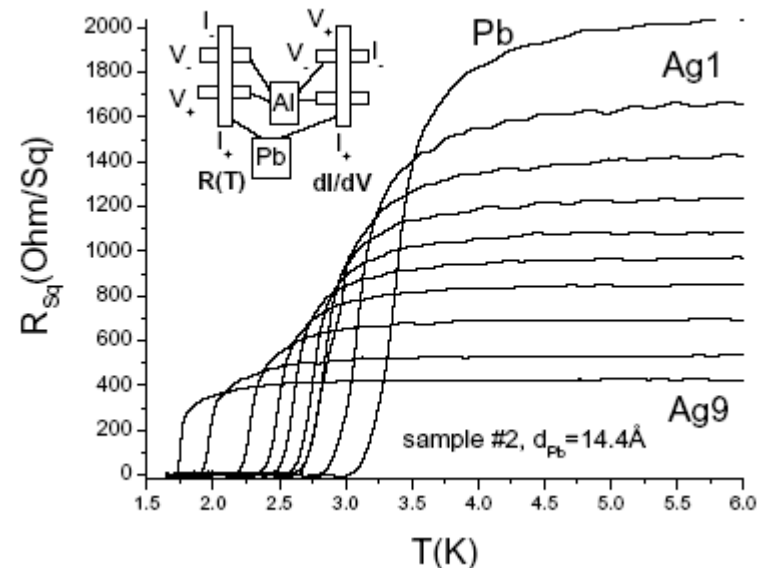


# Proximity Effect in Superconducting Multilayers

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Superconductivity addresses both fundamental aspects of physics and has several important practical applications. When a superconductor is in contact with a normal metal, the proximity effect results. The normal metal influences the superconductor and the superconductor influences the normal metal. In this work, we study the effects of multilayers (periodic layers) of superconductor and normal metal.



Superconducting transition of 14Å film of Pb (top curve) with addition of sequential 1.6Å layers of silver;  $R$  decrease and  $T_c$  decreases.

# Proximity Effect in Superconducting Multilayers

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Superconducting critical temperatures for multilayers of Pb and Ag. These are measured in situ as we grow the samples. The periodicities in the three samples are 65Å, 29Å and 18.5Å. The lines are the result of a simple theory to describe these oscillations. For the lower periodicity, the deviation from the theory illustrates a cross-over to a highly correlated electron system; a phenomenon that is not yet fully understood.

Two postdocs (Louisa Bokacheva, postdoctoral researcher, UCSD and Olivier Bourgeois, researcher at CRTBT/CNRS) and one undergraduate (Sara Gamble, NSF-REU student; received her BS in Physics May, 2003; presently graduate student at Stanford Univ.) contributed to this work.

